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ABSTRACT

This paper examines the problems in definition of punishment at the construct level, comparing the common use meaning of the term with a behavioral definition and contrasting two definitions used within the field of psychology. The paper discusses whether punishing stimuli must be physically painful, the appropriate use of painful stimuli, and establishes corporal punishment as one category of operational definition under the larger construct of punishment. The next question discussed is whether a punishing stimulus must be aversive and whether aversiveness is both a necessary and sufficient condition to be able to state that punishment has occurred. Conclusions are drawn about the more suitable construct level definition of punishment. (Author/MLF)

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PUNISHMENT: PROBLEMS IN DEFINITION

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In reviewing a number of studies, articles and books on punishment it became clear that basic agreement as to a definition of punishment is lacking. This paper will examine the problems in definition of punishment at the construct level comparing the common use meaning of the term with a behavioral definition and contrasting two definitions used within the field of psychology. Some of the reasons for these difficulties will be outlined. Operational definitions of punishment will be discussed, then, in an attempt to resolve the conflict in definitions at the construct level. Based upon the operational definitions we will determine whether punishing stimuli must be physically painful. We will also discuss the appropriate use of painful stimuli and establish corporal punishment as one category of operational definition under the larger construct of punishment. Then, we will discuss whether a punishing stimulus must be aversive and whether aversiveness is both a necessary and sufficient condition to be able to state that punishment has occurred and finally, draw conclusions about the more suitable construct level definition of punishment.

The Construct Level
Technical Term and Common Usage

In his article on the punishment of human behavior, Johnston (1972) accepts as his definition of punishment the one articulated by Azrin and Holz which calls for "a reduction of the future probability of a specific response as a result of the immediate delivery of a stimulus for the response" (1966, cited by Johnston, p. 1034). In examining this definition it is obvious that a given stimulus cannot be defined as a punishing stimulus in advance. The stimulus can earn its punishment label only after it results in the reduction of the probability of a response. If such a reduction does not occur, by definition, a given stimulus is not a punishing stimulus.

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This is not a unique circumstance. The authors of Contingency Management (1972), articulate a similar definition for reinforcement.

> Too often people try to change behavior by using consequences that they think are reinforcing or punishing. When the behavior fails to change they claim that the procedure is at fault . . . perhaps all that was needed was a more effective consequence. There is no such thing as a reinforcer that doesn't work, because by definition a reinforcer increases the future probability of a response it follows. If an event does not do this, it is not a reinforcer (Malott, p. 24, ch. 1).

Thus, neither the reinforcing nor punishing quality of a stimulus can be determined in advance of its application, according to the behaviorist's use of the terms.

The difficulty of establishing such a technical definition for the term "punishment" is greater because the word "punishment" has a more common usage than reinforcement. A behavioristic definition for research purposes conflicts with the common usage and notions about "punishment." For example, Webster's Third New International Dictionary defines "punish" as "1: to impose a penalty (as of pain, suffering, shame, strict restraint, or loss) upon for some fault, offense, or violation: a: to afflict (a person) with such a penalty for an offense." A "punishment" is defined as "1: the act of punishing: the infliction of a penalty, 2a: retributive suffering, pain, loss: penalty." There is in the more common definition no mention of the criteria "reduction of the future probability of a response."

These two definitions differ in two primary ways. First, the Webster's definition of "punishment" describes in evaluative language that which is called the "response" in the behaviorist's definition; that is, the punishment is imposed for some "fault, offense, or violation." Secondly, the punishment itself is characterized as "suffering," "pain," "loss," "shame," "strict restraint," whereas, in the behaviorist's use of the term, the punisher is not characterized beyond the stipulation that it must reduce the future probability of a response.

This is an important distinction for two reasons. In a punishment contingency the use of a punisher such as pain or shame might not result in the reduction of the future probability of a response; hence, such a Webster-defined punisher would not be a punisher at all. Furthermore, a stimulus which neither causes suffering, nor pain, nor loss, nor shame, nor strict restraint could result in the decrease of the future probability of a response and, thus, would be by definition a punisher. The behaviorist's definition could include as a subset the more common definition of punishment, but the latter could not subsume the behaviorist's definition.

Two Definitions Within Psychology

The contradiction between the behaviorist's definition and the common definition exists not only between the field of psychology and the lay population, but also, within psychology. It is currently unresolved. In their summary of the decisions which occurred at the Conference on Punishment held in 1967, Campbell and Church (1969), discuss this very issue. Two conventional approaches to the definition of punishment were described as follows:

> One is to define punishment in a manner opposite but otherwise analagous to the familiar functional definition of reinforcement; i.e., punishment is the presentation of an event consequent upon a response that reduces the probability of the response. The other is to say that punishment is the presentation of an aversive stimulus consequent upon a response, and then define aversiveness by some other operation (p. 518).

Once again, we find two kinds of definitions--one in strictly functional terms and the other requiring evaluative judgments about the quality of the stimulus.

For these conference participants "there was general agreement that a punishment procedure necessarily implies a contingency between a response and a noxious stimulus," thus seemingly adopting the second of the two definitions (p. 518). Of importance, however, is the fact that "there was no agreement as to whether the criterion of noxiousness should be a reduction in rate of responding or an independent assessment

of the noxious properties of the stimulus" (p. 519). I would suggest that this is simply the original problem restated and, thereby, unresolved. Substitute the word punishment for "noxiousness" and we have a reiteration of the definitional question.

During this same discussion one participant reportedly "pointed out that we must abandon the hope that there is one inviolable definition of a noxious stimuli that can never be changed. A shock of some fixed intensity and duration is not always a punisher. It is a punisher for some organisms, at some times, in some situations" (p. 519). An awareness of this fact would seemingly lead to an adoption of the first of the two definitions of punishment using a response decrease criterion. Correspondingly, a rejection of the definition which requires some a priori determination of the nature of the punisher would be in order, in that that determination cannot be made reliably. Yet, this did not occur. In fact, the discussants proceeded to agree generally that "the word punisher was roughly synonomous with an annoyer, a noxious stimuli, or an aversive stimulus, but there was no clear preference for one term over another" (p. 519).

The More Prevalent Definition

This unresolved definitional problem is clearly evident in the literature on punishment using human subjects during the last five years. Very few experiments or studies seemingly adhered to a definition of punishment which called for "a reduction of the future probability of a specific response as a result of the immediate delivery of a stimulus for the response." The majority of studies seemingly subscribed to the definition of punishment as the presentation of an aversive stimulus consequent upon a response . . ." stressing the aversive qualities of the stimulus rather than the response-reducing results. Very few of these, though, offerred any evidence of attempts to ". . . define aversiveness by some other operation."

Given for the moment that we adopt the definition of punishment as the presentation of an aversive stimulus, it is extremely important that that quality of aversiveness actually exist. The failure to demonstrate that a particular operational definition of punishment is, in fact, aversive is a serious flaw in the many studies which subscribe to this definition. In his article entitled "Aversion by fiat: The problem of face validity in behavior therapy," John Berecz (1973) writes ". . . investigators claiming to employ aversion techniques need to design experimental operations which rigorously demonstrate that subjects experience the stimuli as aversive" (p. 111). Otherwise, it is difficult to determine whether or not punishment has taken place at all, let alone whether punishment has succeeded or failed to modify behavior.

Berecz directs his criticism toward the field of behavior therapy, most particularly studies on punishment and smoking behavior. His remarks have much wider applicability. "Intuition seems in most cases to have dictated the techniques employed . . . ," (p. 110) he writes. "Stimuli have been defined by fiat as 'aversive' and many writers have concluded that punishment techniques have been given a fair trial and shown to be ineffective" (p. 111). Whether shown to be ineffective or effective, the failure to demonstrate aversiveness is a serious problem within the group of studies which accept the definition of punishment as the presentation of an aversive stimulus.

In contrast, this particular problem does not present itself if the alternate definition of punishment is adopted--a decrease in the future probability of a response as a result of the immediate delivery of a stimulus for the response. The decrease occurs or it does not. If it does occur, then punishment was applied. If it does not occur, punishment was not applied, regardless of the qualities of the stimulus. The stimulus may be a painful shock, time-out from positive reinforcement, a quiet reprimand or whatever. If the response being consequated subsequently decreases, punishment was applied. If not, the researcher's task is to find a stimulus that <u>will</u> work. A basic

premise is that the punishment paradigm can effectively modify behavior. This premise is no more open to question than whether reinforcement works. All that is necessary is for an appropriate stimulus to be applied and that stimulus may vary from one individual to another, one situation to another, or one behavior to another.

Three Factors Which Have Contributed to the Definitional Problem

Is punishment to be defined as a decrease in the response being consequated or is it to be defined by the nature of the stimulus used, be it called a "punisher," an "annoyer," a "noxious stimulus," or an "aversive stimulus"? We need to agree soon on what a punishment contingency is. I would suggest that three factors contributed to the difficulty of the participants in the 1967 Conference on Punishment in addressing the definitional issue more clearly--the long-standing common meaning of punishment, described earlier; the prevalent operational definition of punishment, electric shock; and, the emphasis upon animal subjects in punishment research. One cannot use a soft reprimand to a rat in a t-maze. With regard to electric shock, Wagner writes, "It is a truism, pointed out by many authors, that our systematic knowledge of punishment is based almost entirely on the effects of electric shock" (Wagner, in Campbell and Church, 1969, p. 178). Similarly, Boe and Church note that "by far the most frequently used stimulus as primary punishment has been electric shock. . . . Electric shock is particularly useful in experimental work on punishment because its intensity, duration, delay, frequency, and schedule can be precisely controlled and because it has strong behavioral effects" (1968, pp. 298-299).

An Empirical Question

This practice of using electric shock as the predominant operational definition for punishment has two important results. First, it contributes to a caricature of punishment by the overemphasis upon one particular subcategory of potentially punishing

stimuli. This caricature gives sustenance to those who would discredit punishment altogether and equate proponents of punishment efficacy with perpetrators of violence or some such thing. The image of an experimenter or a practitioner using soft reprimands or short periods of time-out will not create the same impression as one waving an electric shock prod. Secondly, the practice allows one to continue to assume that a punishing stimulus must be noxious, aversive, painful or annoying, as these words are commonly defined. However, when Johnston asserts that "there is neither stated nor intended any implication that the consequent stimulus must be in any way painful to the subject or the experimenter," he is posing an empirical issue.

Does a stimulus have to be aversive or painful (the word "painful" is to mean physically painful) in order that its consequation of a response result in a decrease in the future probability of a response? If we continue to depend heavily upon electric shock we will remain unable to answer the question. Furthermore, if we continue to adhere to the more prevalent definition of punishment as the presentation of an aversive stimulus, the question will not ever arise. We may wish to try to strike a middle ground between the two competing definitions and insist that any stimulus which is applied in a punishment contingency and successfully reduces the response rate must have some quality of aversiveness or noxiousness. But, that, then, gives new meaning to those terms for it may include such stimuli as the loss of three minutes in a gym period or a quietly-given direction to a child. Which brings me to suggest that the degree of aversiveness or noxiousness is part of the issue here. Punishment is a dirty word to many because it is associated with a degree or kind of aversiveness that is objectionable. Perhaps it would be advisable to look now at the explicit meaning given to "punishment" in a variety of studies to facilitate further understanding of the defitional problem and the notion of aversiveness.

The Operational Level
An Answer to an Empirical Question

An examination of the many operational definitions of punishment used in punishment studies with human subjects in the Psychological Abstracts from January, 1969 through October, 1974 resulted in this outline:

Major categories of operational definitions in evidence in the literature

1. Withdrawing positive reinforcement
   - a. Time-out
     - (1)from assorted stimuli
     - (2)from speaking
     - (3)from an apparatus
     - (4)contingent social isolation
   - b. Response cost
     - (1)assorted losses
     - (2)loss of money
     - (3)loss of tokens
     - (4)loss of points
2. Presentation of stimuli
   - a. Spoken or written stimuli
     - (1)the word "wrong"
     - (2)other disapproving words or phrases
     - (3)written or printed stimuli
     - (4)vicarious effects of verbal stimuli
   - b. Sound or noise stimuli
     - (1)horns
     - (2)buzzers
     - (3)loud tones
   - c. Electric shock
     - (1)self-administered
     - (2)individually-determined shock levels
     - (3)experimenter-determined shock levels
     - (4)electric shock prod

Such a categorization representing a review of over 150 studies containing some method of operationalizing the construct of punishment should give ample evidence in favor of Johnston's assertion that "there is neither stated nor intended any implication that the consequent stimulus must be in any way painful to the subject or to the experimenter." The variety of operational definitions used included a preponderance of non-physically painful examples. (The degree of psychological "pain" is not so readily addressed, nor do I think that Johnston's use of "painful" was meant to include such a notion).

The fact that so many different operational definitions have been used is important for the reasons discussed earlier with regard to the nearly exclusive use previously of electric shock in animal research. In work with human subjects on punishment many more options are possible and we are thus able to experiment with operational definitions completely unsuitable otherwise.

Painful Stimuli Have A Place

Having established the punishment need not be physically painful, we will now examine the issue of the use of painful stimuli. Corporal punishment is not a major category in the above list because no direct investigations were made of corporal punishment as it is traditionally conceptualized--that is, pain inflicted upon the body of a person by another with or without some sort of handy instrument. There were two studies which made very tangential reference to a stimulus which would typically be classified as a corporal punishment such as slapping or hitting. In Moore and Bailey (1973) the mother of a three-year old child manifesting "autistic-like" behavior used "approving" and "disapproving behaviors" to modify behaviors. Disapproving behaviors included any negative verbalization such as "That's bad" or physical interactions such as withdrawal of attention, withdrawal of physical contact, or spanking. In Kircher, Pear and Martin (1971) shock was the primary operational definition for punishment but, slaps were used, as well, for "disruptive behavior." No other references to traditionally defined corporal punishments were found. If there were investigations of corporal punishment, a sixth category, point 2:d would have been added to the outline. It is important to emphasize that corporal punishment is but one kind of operational definition of the general construct of punishment. Too often the words are used synonymously and interchangeably with a resulting loss of clarity in discussion.

The studies using an electric shock prod might be classified by some as a kind of corporal punishment but I would keep them separate in that very few of us have access to such instruments and this is not the usual way of picturing corporal punishment. Similarly, I would not include just any experiment using electric shock as corporal punishment because in most cases, the subjects are volunteers and in some of the cases determine their own shock level or administer it themselves. This is also not the way in which one usually conceives of corporal punishment. Thus, from the punishment studies currently being conducted we can find little, if any, precise information about the effectiveness or utility of corporal punishment. We can find evidence for an assertion that there are a great many non-physically painful stimuli demonstrably able to reduce behaviors from which we can choose if we are to employ a punishment paradigm.

However, it is important to note that there are instances in which a painful stimulus might best be used. An electric shock prod was used only with self-mutilating children, except in one instance when it was used with a psychotic child given to violent destruction of appliances. With regard to the infliction of shock for self-mutilating behavior we need to realize not only that extinction works, too, but also, that the pain that is self-inflicted during this time of extinction counts, too. If our choices are placing a child in restraints indefinitely, enduring an extinction procedure (if that's even possible) in which severe self-destruction will occur, or administering relatively few painful shocks, the latter seems the best of the three. Baer's remarks (1971) are pertinent. "A small number of brief, painful experiences is a reasonable exchange for the interminable pain of a lifelong maladjustment" (p. 36). He also writes:

> The therapist who humanly avoids inflicting pain on his patients has no moral superiority over another therapist who gives a patient electrical punishment so that he may escape social punishment. The basic questions are which punishment is tougher, and which lasts longer. We have a bookkeeping problem, not a moral one (p. 36).

Thus, Baer would support the use of even painful stimuli under certain circumstances. There may be a few other circumstances in which painful stimuli could be deemed appropriate as well.

To assert that painful stimuli may have a limited place in punishment contingencies is not to advocate child brutality. It is society's responsibility to regulate the ways in which the findings of science are used, for example, the ways in which extremely powerful methods of punishment of reinforcement are used. Those given to battering children or excessive corporal punishment who find support for their positions in what has been written above could find it anywhere. The absence of critical-minded punishment research and writing will not change their behaviors. Laws and regulations must try to control it. Becker's remarks are pertinent here.

> The third class of consequences normally available to teachers are punishing stimuli. There is probably no other area of behavior theory about which there is more confusion, misunderstanding, and emotion than the use of punishing stimuli. Many believe they should not punish because it does not work or because it only produces a temporary suppression of behavior. Some believe that any use of punishment is immoral. The facts are that many stimulus events can be found which will weaken (punish) behaviors they follow, just as many stimulus events can be found which will strengthen (reinforce) behaviors they follow (1). Whether their use is moral or not depends on judgments of the total benefits for the person and society which follow from their use or nonuse (1973, p. 94).

The use of any punishing stimulus, painful or not, requires a judgment about total benefits. We will be better able to make such judgments if we are agreed upon what a punishment contingency is.

We have seen that the stimulus in a punishment contingency does not have to be painful. We have, also, discussed circumstances where painful stimuli seem to be a reasonable choice. Returning, now, to the definitional question and the issue of aversiveness, it should be clear that "aversiveness" is not a sufficient condition for a punishing stimuli. Given the most extremely painful and aversive circumstances, we have seen behavior persist. Is aversiveness, then, merely a necessary condition?

As written earlier, if "aversive" can be said to include three minutes loss of gym time or a quiet reprimand, then any stimulus which reduces the future probability of a response could be said to have some quality of "aversiveness." I'm not sure that that adds one bit of information to our definition, however, and can contribute to lingering misconceptions about punishment. The response-reduction definition seems to me to be the better alternative. If the stimulus applied with whatever degree of aversiveness results in a decrease in the incidence of the response, we have used a punishing stimuli. With this definition we need not make elusive determinations about the stimulus's degree of aversiveness--we have a clearly defined criterion and a more clearly defined construct. Refinements in this definition will be valuable and are certainly necessary. At present "any" stimulus which reduces the future probability of a response can include chaining a child to her desk to reduce the future probability of out-of-seat behavior. It is not with such absurdities that psychologists intend to deal, however, the definition does not preclude such a circumstance. Furthermore, the necessity for immediate application of a stimulus needs further investigation with human subjects. All in all, however, the response-reduction definition and concomitant difficulties are preferable to the definition requiring stimulus aversiveness to be assumed or established.

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